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NOTES ON THE PREALPINE FLORA OF THE PICOS DE EUROPA, SPAIN—II

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A brief description of earlier botanical studies of the Picos de Europa has already been included in a previous paper (Dresser, 1959), which also described a visit by the author to this part of the Cordillera Cantabrica in 1956. In late July and early August of 1960 a second visit was made to the Picos de Europa. The present account is of a further study of the area, including two localities not previously visited: namely the Puerto del Ponton and the Lagos de la Enol and Encina in the Sierra de Covadonga. These two areas, which are on the west and north-west of the main massif of the Picos de Europa, receive a very high rainfall as the prevailing wind is from the W to NW. Frequent mists blow up from the sea. Except for a small wood of stunted beech trees at 1200–1300 m., the tree line at the Lago de la Enol is at about 1000–1050 m. Further inland, at the Puerto del Ponton the tree line is at 1300–1400 m. The prealpine area is assumed to be that area above the tree line.

In the last few years the growth of the tourist industry in Northern Spain has been most marked. This has resulted in further changes in the sociological and economic life of the country and in particular in the utilisation of marginal land, usually used for grazing herds of goats, sheep and cattle. This is especially true of the prealpine regions where the grazing is confined to the summer. Herdsman's bothies in areas remote from the "summer" villages are falling into disuse and it is noticeable that in these outlying areas grazing is very light, whereas in the areas close to the summer villages there is extreme overgrazing. It is not known whether there are less herdsman than formerly or whether present herdsman are less independent. To the casual observer, the former alternative seems quite likely.

It is thought that a continued study of a region such as the Picos de

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Europa, over a period of years, will provide interesting and useful information about the effect of grazing on an edapho-climatic climax.

The major difference between the areas first studied in 1956, and the two localities first studied in 1960, is the presence of the lacustrine habitat of the Lago de la Encina. A description of this habitat is given below. The many differences in the distribution and occurrence of species between the various areas studied, are detailed in the Plant List. Because of the general similarities in Habitats A-C of the West and East sides of the massif of the Picos de Europa, no further description of these is given.

D. LACUSTRINE

1. *Plants emergent or floating in the water of the lake.*

The Lago de la Enol has a very poor flora, mainly due to the topography of the lake. The Lago de la Encina contains more silt, has its water level raised a few centimetres by means of a small earth dam and has, as a consequence, a richer flora, together with a fairly extensive marsh. There is a summer village nearby and the immediate vicinity of the lakes, the flora of the lake itself and the marsh, are heavily overgrazed. As a result the grassy slopes round the lakes are a lawn-like turf, with scattered and closely cropped bushes of *Genista hystrix* and *Genista hispanica*. Most of the plants collected in this area (LE, A2) were growing in the protection of these bushes or on the surrounding limestone cliffs (LE, C1-2).

Growing floating in the water of the lake were *Potamogeton natans*, *Polygonum amphibium*, *Utricularia vulgaris*, and *Ranunculus aquatilis*, all forming extensive patches, the two latter in shallower water. Growing emergent from the water were *Juncus articulatus*, and *Juncus effusus* which formed patches in large areas of the lake, especially in those parts merging with the marsh. In shallower water grew *Equisetum palustre*, *Galium palustre*, *Menyanthes trifoliata*, *Plantago lanceolata*, *Sparganium simplex*, and rather surprisingly *Briza media* and *Agrostis alba*.

2. *The marsh.*

Most of the plants in this habitat were also found in wet flushes (A3) in other areas. Plants which were found here, or in the water of the lake, but not elsewhere, include *Equisetum palustre*, *Ranunculus flammula*, *Epilobium palustre*, *Centaurium tenuiflorum*, *Myosotis palustris*, *Mentha* sp., *Plantago major*, *Polygonum amphibium*, *Agrostis* sp., and *Holcus lanatus*. The most common plants in this habitat were *Polygonum amphibium*, and *Juncus effusus*.

SUMMARY OF HABITATS

A. CLOSED.

1. Lightly grazed.
2. Heavily grazed.
3. Wet flush.

B. OPEN AND SEMI-OPEN.

1. Scree.
2. Semi-fixed slopes.
3. Dried-up stream bed.

C. RUPICOLOUS.

1. Ledges and deep clefts.
2. Rock cracks.

D. LACUSTRINE.

1. Emergent and floating.
2. Marsh.

PLANT LIST

The nomenclature of Willkomm and Lange (1861-1880) is used or included as bracketed synonyms. The following abbreviations are used for localities (see Map, Fig. 1):

- PV — Peña Vieja.
 RA — Refugio Aliva and environs.
 RE — Ridge to the north of Espinama.
 V — Valley to the south of Pido.
 PC — Pico San Carlos.
 LV — Lloroza and La Vueltona.
 PP — Puerto del Ponton.
 LE — Lago de la Encina and environs.

The altitude is given in metres. The habitat is indicated for each species by means of a letter and number referring to the Summary of Habitats. If a species was recorded in the previous paper (Dresser 1959) and is repeated here, then only additional data is included.

*Species not included in the previous paper.

†A correction to the name listed in the previous paper.

SELAGINELLACEAE

Selaginella selaginoides (L.) Link V, 1800, A3.

EQUISETACEAE

(Equisetaceae and Polypodiaceae det. D. M. Henderson, Edinburgh).

**Equisetum palustre* L. LE, 1100, D1-2.

POLYPODIACEAE

Pteridium aquilinum (L.) Kuhn LE, 1100-1250, A2.

Asplenium viride Huds. PP, 1675-1800, C1; LV, 1900, C2 (wet).

Asplenium trichomanes L. PP, 1675-1800, C1; LE, 1150-1250, C1-2.

**Asplenium ruta-muraria* L. V, 1500-1600, C1.

**Blechnum spicant* (L.) Roth PP, 1650-1750, A3.

**Phyllitis scolopendrium* (L.) Newm. (*Scolopendrium officinale* Sm.) LE, 1150, C1.

Cystopteris fragilis Bernh. PP, 1700, C1; PV, 2500, C2; LV, 1900, C2 (wet); LE, 1200-1300, A1 (Covered with uredosori of *Hyalospora polypodii* (Diet.) Magn).

Polystichum setiferum (Forsk.) Woyнар (*Aspidium aculeatum* Koch var. *angulare* Gren.) LE, 1200-1300, C1.

**Polystichum lobatum* (Huds.) Woyнар (*Aspidium aculeatum* Koch var. *vulgare* Gren.) V, 1500, C1.

**Thelypteris oreopteris* (Ehrh.) C. Chr. (*Polystichum oreopteris* DC.; *Aspidium oreopteris* (Ehrh.) Sw.) PP, 1150-1250, C1-2.

- **Thelypteris dryopteris* (L.) Slosson (*Polypodium dryopteris* L.) V, 1550, B2.
- **Thelypteris robertiana* (Hoffm.) Slosson (Possibly included in *Polypodium dryopteris* L. in Willkomm and Lange (1861-1880)) LE, 1100-1150, A1-2.
- **Polypodium vulgare* L. V, 1500, C1.
- **Cryptogramma crispa* (L.) Hook. & Bauer (*Allosorus crispa* (L.) Bernh.) V, 1800, C1.

CUPRESSACEAE

- Juniperus communis* L. subsp. *nana* (Willd.) Syme PP, 1525-1675, A2; PC, 2200, A2 (near snow). Specimens in the Edinburgh Herbarium from the Picos de Europa, similar to the PP collection, have been named *J. alpina* Willd. by Gandoger 1874.

TAXACACEAE

- **Taxus baccata* L. LE, 1150-1200, C1.

RANUNCULACEAE

- Caltha palustris* L. PP, 1650-1750, A3; LE, 1100, D2.
- Helleborus viridis* L. PP, 1700, C1-2; LE, 1200, A1.
- Aconitum lycoctonum* L. LE, 1200-1250, A1; RA, 1800, C1.
- **Aconitum napellus* L. LE, 1225, A1.
- **Anemone nemorosa* L. PP, 1525-1675, A1-2.
- Anemone pavoniana* Boiss. RA, 1750, B2 (below snow patch); LV, 1900, C2 (wet).
- **Anemone hepatica* L. (*Hepatica triloba* Chaix) LE, 1300, C1 (Fagetum on limestone pavement), RE, 1500, B1.
- Ranunculus parnassifolius* L. LV, 1900, C1 (wet); PC, 2200-2300, B2 (near snow).
- **Ranunculus pyrenaicus* L. PC, 2200-2300, B2 (near snow).
- **Ranunculus amplexicaulis* L. V, 1800, C1.
- Ranunculus stevenii* Andr. PP, LE, 1200-1800, A1-3, B2.
- Ranunculus repens* L. LE, 1100, D2.
- **Ranunculus flammula* L. LE, 1100, D2.
- **Ranunculus aquatilis* L. (s. lat.) LE, 1100, D1.
- **Aquilegia vulgaris* L. PP, 1650-1750, A3.

BERBERIDACEAE

- **Berberis vulgaris* L. PV, 1800, C1.

CRUCIFERAE

- Hutchinsia auerswaldii* Willk. LE, 1200, C2.
- Sisymbrium contorta* Cav. LE, 1150-1250, A1-2, C1.
- Arabis alpina* L. LE, 1200-1300, C1.
- Cardamine latifolia* Vahl. LE, 1100, D2.
- **Matthiola tristis* (L.) R.Br. PV, 1750, B2.
- Draba dedeana* Boiss. & Reut. PV, 1800-2500, C2.

RESEDACEAE

- Reseda glauca* L. LE, 1200, C1.

CISTACEAE

- Helianthemum vulgare* Gaertn. var. PP, 1525-1800, A2, C1; LE, 1150, A1.
Helianthemum canum (L.) Baumg. var. *cantabricum* Font Quer & Rothm.
 PV, 2000, A1.

VIOLACEAE

- **Viola palustris* L. RA, 1750, A3.
Viola riviniana Rechb. LE, 1200-1300, C1; PP, 1750-1800, B2.
Viola rupestris Schmidt PV, 1750, B2.

CARYOPHYLLACEAE

- Silene ciliata* Pourr. PV, 1700-1800, B1.
 **Silene cucubalus* Wibel. PP, 1525-1800, A1, B1-2.
Silene italica (L.) Pers. var. PP, 1675-1800, C1-2.

HYPERICACEAE

- Hypericum richeri* Vill. PP, 1650-1750, A3.
Hypericum nummularium L. PV, 1750, 2000, B1, C1 (wet); LE, 1100-1200, A1, C1.

MALVACEAE

- Malva moschata* L. var. *geraniifolia* (J. Gay) Willk. PP, 1700-1800, A2, B2; LE, 1200, C1.

LINACEAE

- Linum catharticum* L. PP, 1525-1675, A2; LE, 1100-1200, A2.
Linum viscosum L. LE, 1200, C2.
Linum salsoloides Lam. PV, 1750, B2 (near snow patch).

GERANIACEAE

- **Geranium robertianum* L. PV, 1750, B2; LE, 1100-1150, A1.
 †*Geranium subargenteum* Lange RA, 1750, B2; PP, 1675-1800, A2, C2.
 Specimens previously collected were incorrectly named *G. cinereum* Cav.
 (V, 1675-1800, B2-3).
 **Geranium cinereum* Cav. Collected outside the area of this study at
 Trescares, 150 m., amongst gravel beside River Cares (see Map).
Geranium pyrenaicum Burm. f. (*G. pyrenaicum* L.) PP, 1675-1800, C1;
 LE, 1100-1200, A2, C1.

AQUIFOLIACEAE

- **Ilex aquifolium* L. LE, 1150-1200, C2.

PAPILIONACEAE

- Genista hystrix* Lange. LE, 1150-1200, A2 (co-dominant; heavily
 grazed).
Genista hispanica L. LE, 1150-1200, A2 (co-dominant; heavily grazed).
 **Ulex minor* Roth (*U. nanus* Forster) LE, 1100-1200, A1, C1.
 **Genista obtusiramea* Gay PP, 1525-1675, A1-2.
 **Cytisus purgans* (L.) Willk. PP, 1300-1675, A1-2 (and in beech woods).
Trifolium pratense L. PP, 1675-1800, C1-2; LE, 1200, A1, D2.

- Trifolium repens* L. PP, 1650-1750, A3; LE, 1200, D2.
Anthyllis vulneraria L. (s. lat.) cf. *A. dillenii* Schult. PP, 1675-1800, C1-2.
Lotus corniculatus L. (s. lat.) PP, 1525-1650, A2, A3; LE, 1100-1200, A1-2.
 **Medicago suffruticosa* Ram. subsp. *leiocarpa* (Benth.) Willk. LE, 1200, C1-2; PV, 1750, B2, C1.
 **Astragalus alpinus* L. V, 1600, C1.
 **Lathyrus pratensis* L. PP, 1525-1675, A2.
 **Vicia cracca* L. LE, 1225, A1.

ROSACEAE

- Sorbus aria* (L.) Crantz (s. lat.) LE, 1200, C2.
Poterium sanguisorba L. PP, 1525-1675, A1; LE, 1200, C1.
 **Crataegus monogyna* Jacq. LE, 1200, C2 (cattle grazed).
Rosa sp. cf. *R. alpina* L. PP, 1675-1800, C1-2; V, 1800-2000, C1.
 **Potentilla palustris* (L.) Scop. (*Comarum palustre* L.) PV, 1750, A3.
 **Potentilla fruticosa* L. PV, 1750-1800, B1.
Potentilla erecta (L.) Räusch. PP, 1525-1675, A1; LE, 1100-1150, A1.
 **Fragaria vesca* L. LE, 1200-1300, C1 (Fagetum on limestone pavement).
Geum rivale L. PP, 1650-1800, A3, C1-2.
 **Amelanchier vulgaris* Moench. LE, 1150-1200, C2; PV, 2000, C2 and B1 (wet).

CRASSULACEAE

- (*Sempervivum* det. Miss C. W. Muirhead, Edinburgh).
Sempervivum cantabricum Huber. LE, 1150-1250, C2; PV, 1800-2300, B2, C1.
 †*Sempervivum arachnoideum* L. var. Cortes, 1900, C1. Plants of this collection have been in cultivation in the Royal Botanic Garden, Edinburgh, since 1956. These plants were previously incorrectly named *S. giuseppii* Wale. Also at V, 1800, C1-2.
 (*Sedum* det. Prof. D. A. Webb, Trinity College, Dublin).
 **Sedum reflexum* L. PP, 1675-1800, C1-2. Previously named *S. rupestre* L. This latter name was rejected by Hylander and Warburg as a *nomen confusum*.
 †*Sedum sedifiorne* (Jacq.) Pau, non Hamet. PC, 1800, C2. Previously named *S. nicaeense* All. Pau's name from 1909 was missed by the Index Kewensis.
Sedum acre L. RE, 1700 B2.
 **Sedum anglicum* Huds. PP, 1525-1675, A1-2; LE, 1150-1200, C2.
 **Sedum album* L. PP, 1400-1525, A2.
 †*Sedum album* L. subsp. *micranthum* (Bast.) L. PP, 1525-1675, A1-2; LE, 1150-1200, C2; RE, 1500, B2; V, 1800, A3. Previously named *S. album* L.
 **Sedum hirsutum* All. PP, 1525-1675, A1-2.
 †*Sedum villosum* L. V, 1775, A3 and V, 1800, A3. Previously named *Sedum* sp. cf. *S. hirsutum* All. and *Sedum* sp. cf. *S. villosum*.
 †*Sedum atratum* L. PV, 1800-2500, B1-2, C1-2; RA, 1700-1750, B2. Previously named *Sedum* spp. cf. *S. atratum* L. and *S. annuum* L.
 **Sedum dasyphyllum* L. PV, 1800, C2.
 **Sedum brevifolium* DC. PP, 1525-1675, A1-2; LE, 1150-1200, C2.

SAXIFRAGACEAE

(Det. Prof. D. A. Webb, Trinity College, Dublin).

Saxifraga aizoon Jacq. PP, 1675-1800, C1-2; LE, 1150-1200, C2.

Saxifraga aretioides Lap. PV, 2500, B2, C2. Leaves of a more normal size than those of the specimens collected in 1956.

Saxifraga chamaepityfolia Bubani (*S. ajugifolia* auct., non L.). PC, 2200-2300, B2.

Saxifraga conifera Coss. RA, 1750, B2.

Saxifraga hirsuta L. LE, 1200-1300, A7.

Saxifraga hirsuta L. var. *paucicrenta* Leresche (*S. geoides* Lacaita). PP, 1675-1800, C1.

Saxifraga spathularis Brot. PP, 1400-1675, A1-2.

**Saxifraga trifurcata* Schrad. LE, 1150-1200, C1-2.

Saxifraga canaliculata Boiss. & Reut. PP, 1675-1800, C1-2.

PARNASSIACEAE

Parnassia palustris L. PP, 1650-1750, A3.

GROSSULARIACEAE

**Ribes alpinum* L. LE, 1150-1200, C2.

ONAGRACEAE

Epilobium alpinum L. PV, 1800, B1-2.

†*Epilobium alsinifolium* L. RA, 1750, A3; V, 1550, A3; PP, 1650-1750, A3.
Previously named *E. alpinum* L.

**Epilobium montanum* L. PP, 1750-1800, B2 (cattle grazed).

**Epilobium palustre* L. LE, 1100, D2.

UMBELLIFERAE

Astrantia major L. PP, 1525-1675, A1; LE, 1200, A1.

Eryngium bourgatii Gouan LE, 1200, C1.

Meum athamanticum Jacq. PP, 1750-1800, B2.

Chaerophyllum hirsutum L. LE, 1100, D2.

Carum carvi L. PP, 1525-1675, A2.

Pimpinella tragium Vill. PV, 1700-1750, B1.

**Pimpinella saxifraga* L. LE, 1225, A1.

Pimpinella siifolia Leresche PP, 1525-1800, A1, B2; LE, 1100-1225, A1.

RUBIACEAE

Asperula hirta Ram. LE, 1200, C1.

**Asperula aristata* L. LE, 1150-1200, C1.

Galium mollugo L. PP, 1525-1675, A2; LE, 1150-1200, C2.

Galium pyrenaicum Gouan PV, 2000, B1.

**Galium palustre* L. LE, 1100, D1.

DIPSACACEAE

Scabiosa columbaria L. (s. lat.). PP, 1675-1800, C1-2; LE, 1200, A1, C1,

**Succisa pratensis* Moench. PP, 1650-1750, A3.

COMPOSITAE

(Det. A. J. C. Grierson, Edinburgh).

Bellis perennis L. PP, 1525-1675, A2.

Erigeron alpinus L. PV, 2000, B2; LV, 1900, C2.

Solidago virgaurea L. PP, 1525-1675, A2.

Gnaphalium silvaticum L. PP, 1750-1800, B1-2.

**Antennaria dioica* (L.) Gärtner. V, 1800-2000, C1 (relatively acid shale).

Achillea millefolium L. PP, 1675-1800, C1-2; LE, 1200, C1.

**Leucanthemum commutatum* Timbr. & Mart. (*Chrysanthemum montanum* L.; *Leucanthemum montanum* DC.). PP, 1675-1800, C1-2; PV, 1750, B1.

**Tanacetum alpinum* (L.) Schultz-Bip. (*Pyrethrum alpinum* Willk.) PC, 2250, B2 (near snow).

†*Senecio aquaticus* Huds. In the previous paper the authority was incorrectly cited as Hill.

Doronicum glaciale Nym. V, 1900, C1.

Centaurea nigra L. PP, 1675-1800, C1-2.

**Cirsium arvense* Scop. var. LE, 1225, A1.

Cirsium vulgare (Savi) Ten. LE, 1225, A1.

Cirsium sp. LE, 1225, A1.

Carduus carlinoides Gouan. PV, 1700-1750, B1.

Carduus defloratus L. PP, 1675-1750, C1-2.

Leontodon sp. PP, 1525-1750, A2-3.

Taraxacum sp. PP, 1675-1800, C1-2.

Crepis albida Vill. subsp. *asturica* (Lacaita & Pau) Babcock LE, 1225, A1.

Crepis lapsanoides (Gouan) Tausch. LE, 1100, D2 and 1225, A1.

Hieracium pilosella L. (s. lat.). PP, 1525-1675, A2.

Hieracium spp. PP, 1525-1800, A2-3, B2, C1-2.

CAMPANULACEAE

Wahlenbergia hederacea (L.) Rehb. PP, 1675-1800, C1-2; LE, 1200, C1.

Jasione carpetana Boiss. & Reut. PP, 1525-1675, A1.

Campanula glomerata L. PP, 1750-1800, B2; LE, 1200, A1.

Campanula pusilla Hänke. LE, 1225, A1.

ERICACEAE

**Daboecia cantabrica* (L.) K. Koch (*D. polifolia* D. Don). PP, 1525, 1675, A2; LE, 1100-1200, A2. Abundant lower down in open woodland, with *Erica cinerea* L. and *Erica vagans* L.

Erica arborea L. PP, 1525-1675, A2.

Erica vagans L. LE, 1100-1200, A2, C1.

**Vaccinium myrtillus* L. PP, 1300-1525, A1. Abundant lower down in woods.

**Vaccinium uliginosum* L. V, 1800-2000, C2 (relatively acid shale).

PLUMBAGINACEAE

Armeria cantabrica Boiss. & Reut. PV, 2400, B2.

PRIMULACEAE

Androsace villosa L. PV, 1750-1850, B1-2.

ASCLEPIADACEAE

- **Vincetoxicum officinale* Moench. RE, 1500, B1; LE, 1225, A1.

GENTIANACEAE

Gentiana verna L. LE, 1200, C1.

Gentiana kochiana Perr. & Song. LE, 1200, C1.

- **Centaurium tenuiflorum* (Hoffmg. & Link) Fritsch (*Erythraea tenuiflora* Hoffmg. & Link; *E. latifolia* Sm. var. *tenuiflora* Link). LE, 1100, D2.

MENYANTHACEAE

- **Menyanthes trifoliata* L. LE, 1100, D1.

BORAGINACEAE

Echium asturicum Lacaita LE, 1200, A1.

Lithospermum prostratum Lois. LE, 1200, C1.

Myosotis alpestris Schm. LE, 1200, C1.

- **Myosotis caespitosa* K. F. Schultz (*M. laxa* Lehm. subsp. *caespitosa* (K. F. Schultz) Hyl.; ?*M. lingulata* Lehm. in W. & L. (1861-1880)). PP, 1650-1750, A3.

- **Myosotis palustris* L. LE, 1100, D2.

SCROPHULARIACEAE

(Det. Miss C. W. Muirhead, Edinburgh).

Linaria filicaulis Boiss. PP, 1675-1800, C1-2.

Linaria alpina (L.) DC. LE, 1225, A2.

Chaenorrhinum origanifolium (L.) Fourr. PV, 2000-2400, B2.

Digitalis parviflora Jacq. LE, 1200-1250, A1.

Erinus alpinus L. var. *glabratus* Lange LE, 1150-1250, C2.

Veronica beccabunga L. LE, 1100, D2.

- **Pedicularis silvatica* L. PP, 1525-1750, A1, A3. It is possible that specimens previously named *P. palustris* L. should be renamed *P. silvatica* L. Unfortunately the specimens are not available for checking.

Pedicularis pyrenaica J. Gay. PP, 1650-1750, A3.

Rhinanthus major Ehrh. LE, 1225, A1.

- **Rhinanthus minor* Ehrh. (s. lat.). V, 1600, C1.

- **Melampyrum pratense* L. PP, 1525-1675, A1.

Euphrasia brevipila Burn. & Gremli var. *subeglandulosa* Bucknell. LE, 1100-1150, A1. Not included in W. & L. (1861-1880).

- **Euphrasia hirtella* Jord. ex Reut. PP, 1525-1675, A1. Not included in W. & L. (1861-80).

- **Euphrasia salisburgensis* Funck. PC, PV, 2000, B2.

- **Scrophularia alpestris* J. Gay. LE, 1100-1150, A2.

LENTIBULARIACEAE

Pinguicula grandiflora Lam. PV, 2000, C2 (wet); PP, 1650-1750, A3; LE, 1200, A3.

- **Utricularia vulgaris* L. (s. lat.) cf. *U. neglecta* Lehm? (not in flower). LE, 1100, D1.

GLOBULARIACEAE

Globularia nudicaulis L. LE, 1200, C1; PV, 1800, C2.

LABIATAE

(Det. I. C. Hedge, Edinburgh).

Thymus serpyllum L. agg. LE, 1225, A1; PP, 1525-1675, A2.

Calamintha alpina Benth. LE, 1150-1200, C1.

Calamintha clinopodium Benth. LE, 1150-1200, C1.

**Sideritis hyssopifolia* L. LE, 1200, C1-2.

**Prunella vulgaris* Moench. PP, 1650-1750, A3; LE, 1200, A2.

Prunella grandiflora Jacq. PP, 1525-1675, A2; LE, 1100-1200, A2, D2.

**Stachys officinalis* L. LE, 1150, A2.

**Mentha pulegium* L. LE, 1100, D2.

Teucrium pyrenaicum L. PP, 1675-1800, C1-2; LE, 1150-1250, C2.

PLANTAGINACEAE

Plantago lanceolata L. PP, 1650-1750, A1, A3; LE, 1100, D1-2.

Plantago alpina L. PP, 1525-1675, A1.

Plantago media L. PP, 1525-1675, A1.

**Plantago major* L. LE, 1100, D2.

POLYGONACEAE

Rumex scutatus L. PP, 1750-1800, B1-2 (cattle trampled).

Polygonum bistorta L. PP, 1650-1750, A3.

**Polygonum amphibium* L. var. LE, 1100, D1-2.

FAGACEAE

**Fagus silvatica* L. PV, 1800, C2 (very stunted, <1m.); LE, 1200-1300, C1 (small trees, <10m., on limestone pavement).

CORYLACEAE

**Corylus avellana* L. LE, 1200-1300, C1 (undershrub in Fagetum on limestone pavement).

SANTALACEAE

Thesium pratense Ehrh. PP, 1525-1675, A2.

ARALIACEAE

**Hedera helix* L. LE, 1200, C1-2 (shaded).

THYMELAEACEAE

Daphne cantabrica Willk. PP, 1675-1800, C1-2; LE, 1150-1200, C2.

**Thymelaea coridifolia* (Lam.) Endlicher var. PP, 1750-1800, B1-2 (cattle trampled). This specimen differs from herbarium material and the description of *T. coridifolia* in having curved, pubescent leaves, and also in having a less pubescent stem than usual: in these respects it is similar to *T. ruizii* Losc. (see Willkomm, 1881-1892). The specimen differs from *T. ruizii* in habit and in having the outside of the flowers pubescent. The type locality for *T. ruizii* is near the Refugio Aliva, in the Picos de Europa. Unfortunately no *Thymelaea* was seen in this locality in either 1956 or 1960, so there is no means of telling whether or not the differences are due to geographical or temporal factors.

EUPHORBIACEAE

- **Mercurialis perennis* L. LE, 1150-1200, C1.

URTICACEAE

- Urtica dioica* L. LE, 1100-1200, C1; RA, 1500, A2.

ORCHIDACEAE

- Orchis maculata* L. (s. lat.). PP, 1650-1750, A3; LE, 1100, D2.

JUNCAGINACEAE

- **Triglochin palustre* L. PV, 1750, A3.

POTAMOGETONACEAE

- **Potamogeton natans* L. LE, 1100, D1.

LILIACEAE

- Veratrum album* L. PP, 1700, A3.

- Merendera montana* (L.) Lange. PP, 1525-1675, A1.

- **Narthecium ossifragum* Huds. V, 1800, A3.

- **Polygonatum vulgare* Desf. (*Convallaria polygonatum* L.) LE, 1250, C1.
(Fagetum).

- Allium ochroleucum* Waldst. & Kit. LE, 1100-1150, A1.

- Allium ochroleucum* Waldst. & Kit. var. *ericetorum* Lange. PP, 1675-1800, C1-2; PC, 2200-2300, B2.

- Scilla verna* Huds. PP, 1525-1675; A1; PV, 1700-1800, B2.

JUNCACEAE

- (Det. D. M. Henderson, Edinburgh).

- Juncus articulatus* L. PP, 1650-1750, A3; LE, 1100, D1-2.

- **Juncus trifidus* L. V, 1800-2000, B2, C1 (damp).

- **Juncus effusus* L. PP, 1650-1750, A3; LE, 1100, D1-2.

- **Luzula campestris* DC. PP, 1650-1750, A3.

- **Luzula silvatica* L. LE, 1225, A1.

SPARGANIACEAE

- **Sparganium simplex* Huds. LE, 1100, D1.

CYPERACEAE

- (Det. D. M. Henderson, Edinburgh).

- Carex nigra* (L.) Reichard. PP, 1650-1750, A3.

- Carex ovalis* Good. PP, 1650-1750, A3.

- **Carex lepidocarpa* Tausch. (*C. flava* subsp. *lepidocarpa* Godr.). PP, 1650-1750, A3.

GRAMINEAE

- **Briza media* L. LE, 1100, D1 (in 15 cm of water).

- Oreochloa disticha* Link. cf. *O. pedemontana* Boiss. PV, 1800, C2.

- †*Agrostis alpina* Scop. PP, 1675-1800, C1-2. Plants of this species were previously incorrectly named *Calamagrostis arundinacea* (L.) Roth.

- Agrostis tenuis* Sibth. PP, 1525-1800, A1-2, C1-2.
Agrostis sp. cf. *A. alba* Schrd. (2 panicles) and cf. *A. tenuis* Sibth. (1 panicle). LE, 1100, D2.
 **Agrostis alba* Schrd. LE, 1100, D1 (very shallow water).
Poa alpina L. Common almost everywhere.
Dactylis glomerata L. LE, 1225, A1.
 **Holcus lanatus* L. LE, 1100, D2.
 **Deschampsia flexuosa* Griseb. PP, 1525-1800, A1, C1.
Festuca ovina L. PP, 1525-1625, A2.
Festuca rubra L. PP, 1675-1800, C1.
 **Festuca rhaetica* Sut. PV, 2000, B2. Only one poor specimen in the Edinburgh Herbarium. Named from description in W. & L. (1861-80), and by comparison with specimens of *F. eskia* Ramd., *F. pseudoeskia* Boiss. and *F. elegans* Boiss. in the herbarium.
Bromus erectus Huds. LE, 1100-1150, A1-2.
 **Brachypodium mucronatum* Willk. PV, 1800, C1. Mucro longer than in most herbarium specimens I have seen, but very similar in a specimen collected by F. A. Brotero, 1877, (Flora Lusitanica—locality not decipherable).

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